

A New Species of the Genus *Curcuma* L., Zingiberaceae

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A new species, *Curcuma antinaia* A. Chaveerach & T. Tanee (Zingiberaceae), from villages in Sang Khom District, Nong Khai Province, northeastern Thailand, is described and illustrated. The villagers have traditionally used the plant's rhizomes as an antidote for cobra bites for many generations. Morphologically, *C. antinaia* is similar to *C. longa* L., but because of some morphological differences and its properties as an antidote for cobra bites, we concluded that it is a new species.

Key words: cobra bite antidote, *Curcuma*, new species, Thailand, Zingiberaceae

The genus *Curcuma* L., Zingiberaceae consists of about 50 species in Thailand (Sirirugsa 1996). Many species are economic plants because of their volatile oils and showy flowers. Species of *Curcuma* have been used as spices, medicines, dyes, foods, perfumes, tonic, and as tropical ornamentals. For medicinal purposes, nearly all species of *Curcuma* have been used worldwide since ancient times (Sirirugsa 1996, Padua *et al.* 1999). In addition to being a cure for common diseases, some species of *Curcuma* have been found to have strong medicinal properties, such as antidotes for snake bites (Ratanabanangkoon *et al.* 1993) and for their anti-tumor properties (Baatout *et al.* 2004).

In villages in Sang Khom District, Nong Khai province, northeastern Thailand, the villagers have for many generations traditionally used the rhizomes of a widely cultivated species of *Curcuma* as an antidote for cobra bites. The anti-venom property has been supported by scientific evidence. The

properties of the plants, including the active ingredient, including the quality, quantity, activity and structure will be submitted elsewhere.

Morphologically, the new species is similar to *C. longa* L., which we first thought it was. We determined that it differed from *C. longa* based on information in Larsen (1993, 1996a, 1996b), Larsen *et al.* (1998), Sirirugsa (1966, 1996, 1998), and Saensouk (2000). We further checked type specimens in many herbaria (BK, BKF, BO, KEP, KKKU, PE, PNH, SING). Illustrations of the studied specimens are shown. Additionally, isolated substances from the rhizomes contain important active ingredients effective as an antidote for cobra bites (data not shown).

***Curcuma antinaia* A. Chaveerach & T. Tanee, sp. nov.** (Figs. 1, 2)

Haec species *Curcumae longae* L. similis, sed rhizoma ramificatione non tabulari, externe viridi-alba ad flavo-

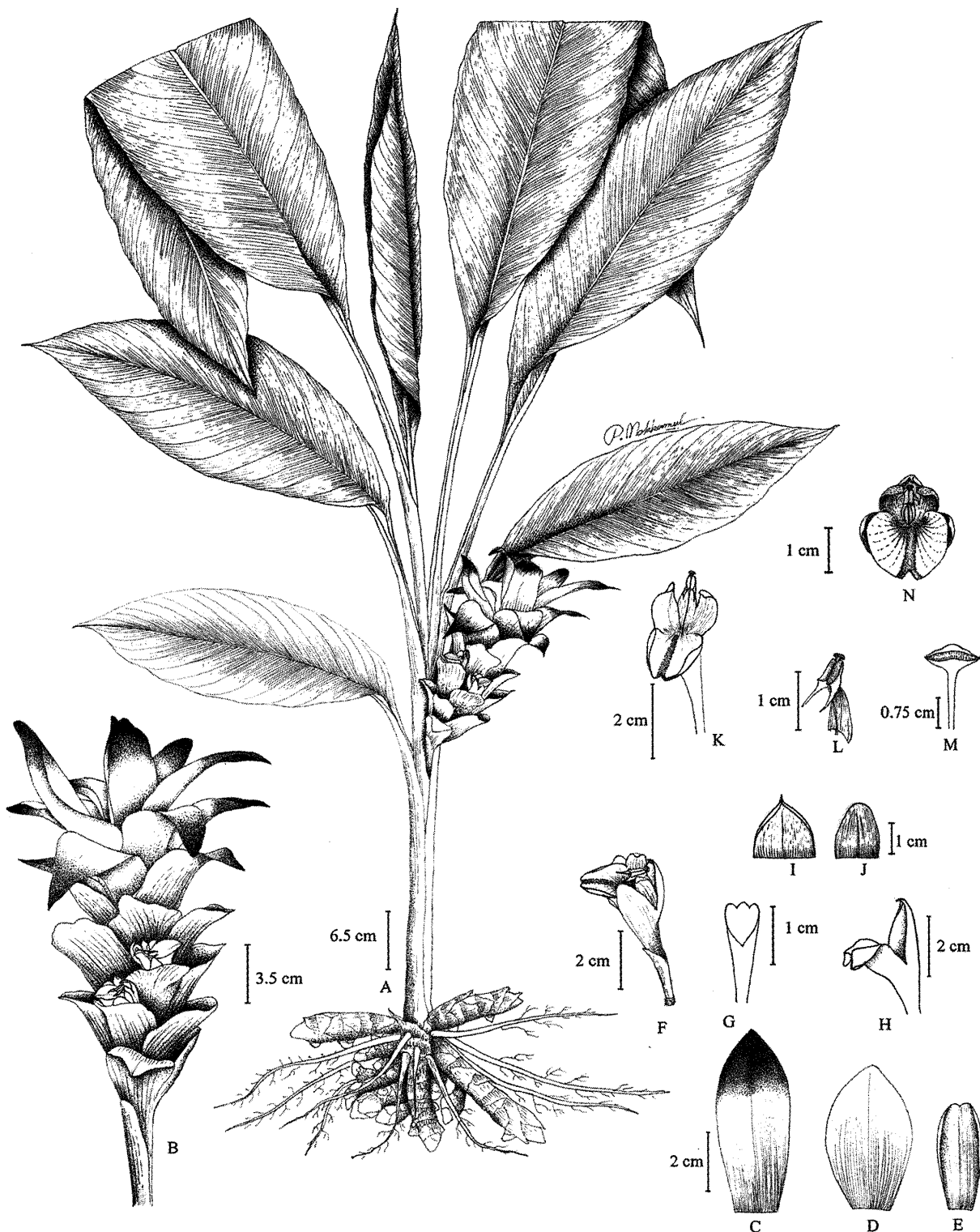


FIG. 1. *Curcuma antinaia* A. Chaveerach & T. Tanee. A. plant habit; B. an inflorescence; C. coma bract; D. fertile bract; E. bracteole; F. side view of a flower; G. enlarged calyx showing apex trilobed; H. corolla; I. dorsal lobe; J. lateral lobe; K. front view of a flower with anther; L. anther with 2 long spurs at the base, style and stigma; M. stigma; N. front view of enlarged flower.



FIG. 2. *Curcuma antinaia* A. Chaveerach & T. Tanee.

brunnea, antidotum ad morsum colubri cuculati (*Elapidae*) continente, foliis basi cuneatis, bracteae comae planae albae basi saccatae apice breve bilobae violaceae, calyce glabro longistrorsum fissurato apice trilobo, corollae albae trilobae, lobo dorsali late ovato cucurato apice mucronato mucrone 2-3 mm longo, lobis lateraribus ovatis apice rotundatis, labello flavo vel aurantiaco cum striae aurantiae ad centrum, ovario glabro.

Typus. THAILAND, Northeastern: Nong Khai Province; Sang Khom District, 300 m elevation, A. Chaveerach 509 (holo- BK [BK 63811, including dried and spirit materials]; iso- KKU).

This species is similar to *Curcuma longa* L., but differs in rhizome not flat in branching, green-white to yellow-brown outside, containing antidote for cobra (*Elapidae*) bite; leaves cuneate at base; bracts of coma flat and white, saccate at base, shortly bilobed and violet at apex; calyx glabrous, longitudinally fissured, trilobed at apex; corolla white, trilobed; dorsal lobe widely ovate, hooded, apex mucronate with a mucron 2-3 mm long, lateral lobes ovate, rounded at apex; labellum yellow or light orange with orange line at the center; ovary glabrous.

Terrestrial herbs, perennial. *Roots* fibrous, some stout. *Pseudostems* erect, to ca. 1 m tall. *Rhizome* branched, 5-10 by 1.5-2 cm, cylindrical, externally greenish white to yellowish brown, internally pale yellow or orange (central part ca. 5 mm in diam.), containing cobra bite antidote. *Leaves* annual 6-8; leaf sheaths green, glabrous, 30-50 cm long; leaf blade elliptic-oblong, 40-70 by 12-16 cm, both surfaces glabrous, base cuneate, apex acute to acuminate, margin entire or slightly undulate. *Inflorescences* developed on pseudostem, 12-15 by 6-8 cm; peduncle glabrous, enclosed in sheaths of two lowest leaves, 20-30 cm long; bracts imbricate; fertile bracts broadly ovate-broadly elliptic, 5-5.3 by 3-3.2 cm, light green, glabrous, saccate, margin free, apex obtuse; coma bracts flat, base saccate, elliptic-oblong, 6-7 by 2.5-2.7 cm, white with violet apex, glabrous; bracteoles obovate-oblong, 2.7-3 by 1.3-1.5 cm, membranous, glabrous,

apex shallowly bilobed, apex of lobes round. Calyx tubular, membranous, 1.6-1.8 by 0.2-0.3 cm, apex trilobed, glabrous, split down one side, ca. 0.5 cm long. *Corolla* tube, 2.3-2.5 cm long, glabrous, white, lobes 3; dorsal lobe broadly ovate, 1.5-1.7 by 1.8-2 cm, saccate, apex hooded, with thorn-like points 2-3 mm long, glabrous; lateral lobes ovate, 1.5-1.7 by 1-1.2 cm, apex round; labellum obovate, yellow or light orange with an orange band along middle from base to apex, 3-3.2 by 1.5-1.7 cm, apex shallowly bilobed or emarginate; lateral staminodes oblong, 1.3-1.5 by 0.7-0.8 cm, yellow, apex round; stamen 1, filament ca. 0.7 cm long, adnate to staminodes, anther crested, versatile, ca. 5 by 2 mm, dorsally hairy, base with 2 long spurs; ovary inferior, glabrous, 3-locular, placentation axile; style 1, filiform ca. 1 cm long; stigma cup-shaped, ca. 1 mm in diam.

Distribution. *Curcuma antinaia* is cultivated in home gardens in several villages in Sang Khom District, Nong Khai Province in northeastern Thailand.

Ecology. open areas in home gardens with moist clay soil; elevation 300-400 m.

Notes. The rhizome of *Curcuma antinaia* is used in traditional medicine as anti-venom for snake bites. The vernacular name “Waan Nak Kharat.” “Nak Kharat” in Thai combines two Bali words “naka + raja” means “King of Naka.” Buddhists believe that Naka is the god of snakes. Its specific epithet is based on the anti-venom property.

Curcuma antinaia has some similarities with *C. longa* L. (Linnaeus 1753, Baker 1890, Gagnepain 1908, Burt & Smith 1983; synonym *C. domestica* Valet.: Valeton 1918, Ridley 1924, Holttum 1950, Henderson 1954, Wu & Larsen 2000), such as rhizome branched, inflorescence developed on pseudostem, leaf blades elliptic-oblong, glabrous, apex shortly acuminate; fertile bracts pale green, apex obtuse; labellum obovate, yellowish with central yellow band; anther spurred at base.

Characters different from the new species are

rhizome flat in branching; rhizome externally orange or bright yellow, not containing active ingredients for cobra bite antidotes; leaf base attenuate; coma bracts spreading, white and green, sometimes tinged reddish purple, apex acute; calyx puberulent, apex unequally 3-toothed; corolla pale yellow, lobes deltoid, central one larger, apex mucronate; labellum yellowish with central, yellow band; ovary sparsely hairy.

Other specimens examined. THAILAND: Nong Khai Province, Sang Khom District *A. Chaveerach* 509 (BK); Kanchanaburi Province, *J.F. Maxwell* 87-882 (BKF); Sakonnakorn Province, Phuphan National Park, *S. Saensouk* 5 (KKU).

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